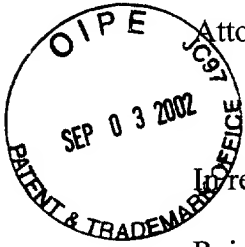


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L. Spruell



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REISSUE PATENT 9-16-02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Is a Reissue Application of: Davis et al.

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For: Combined Lithographic/Flexographic Printing Apparatus and Process

Examiner: Funk, Stephen

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Corey McConan

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AMENDMENT UNDER 37 C.F.R. § 1.173

Dear Sir:

Please amend the claims as follows:

9. (Amended) Apparatus as in claim 6 further including: said flexographic printing station including a plate cylinder having a flexographic plate thereon, a blanket cylinder, and an impression cylinder;

a flexographic plate image transferred from said plate cylinder to said blanket cylinder, said image being formed of said metallic coating, said impression cylinder in ink-transfer relationship with said blanket cylinder, said blanket cylinder transferring said metallic coating to said substrate for printing said flexographic plate image on said substrate; and

an anilox roller associated with said flexographic plate for supplying said aqueous-based vehicle containing said suspended metallic material to said flexographic plate.

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15. (Amended) Apparatus for a combined lithographic/flexographic printing process comprising:

a plurality of successive printing stations for printing color images on a substrate in a continuous in-line process, said printing stations including both lithographic and flexographic printing stations;

a blanket cylinder at least a first one of said flexographic printing stations;

an impression cylinder associated with at least said first one of said flexographic printing stations;

flexographic ink-providing means at said at least first one of said flexographic printing stations for applying a flexographic ink to said blanket cylinder to form an image;

a substrate for receiving said flexographic ink image transferred from said blanket cylinder; and

at least one subsequent lithographic printing station in said in-line process for receiving said image printed substrate and printing an additional colored ink image on said substrate on top of said flexographic ink image using offset lithography.

21. (Amended) Apparatus as in claim 17 further including halftone printing plates for printing said additional colored ink images.

42. The apparatus of any of claims 1, 6, 10, 12, 15 and 17, wherein the substrate is printed on both sides in one pass during the continuous in-line process.

43. The method of any of claims 29, 37, 38 or 39 wherein the substrate is printed on both sides in one pass during, the continuous in-line process.

44. (Twice Amended) Apparatus for a combined lithographic/flexographic printing process comprising:

a substrate;

a plurality of successive printing stations for depositing a series of images on one side of a substrate in a continuous in-line process;

one of said stations comprising a flexographic printing station for printing a liquid vehicle image on said substrate using a flexographic process; and

at least one of said successive printing stations being a lithographic printing station;
whereby said substrate is printed on top of or on the opposite side of that previously printed at said at least one successive lithographic printing stations using the lithographic process in said continuous in-line process.

45. (Twice Amended) Apparatus as in claim 44 wherein at least one image of said series of images at the flexographic printing station is a coating material.

46. (Twice Amended) Apparatus as in claim 44 wherein at least one image of said series of images at said at least one of the lithographic printing stations is an ink.

47. Apparatus as in claim 44 wherein:
said substrate is a paper sheet; and
said apparatus includes a sheet feeder.

48. Apparatus as in claim 44 wherein:
said substrate is a web; and
said apparatus includes a web feeder.

49. An apparatus for a combined lithographic/flexographic printing process comprising:
a plurality of successive printing stations for depositing a series of images on a substrate in a continuous in-line process;
one of said stations comprising a flexographic printing station printing an aqueous-based vehicle on one side of the substrate using the flexographic process to form a metallic coating image;

a suspended metallic material being included in said aqueous-based vehicle; and
at least one of the successive printing stations comprising an offset lithographic printing station printing a color image on top of the aqueous-based vehicle or on the opposite side to that previously printed using the offset lithographic process in said continuous in-line process.

50. Apparatus for creating a combined lithographic/ flexographic printing process comprising:

a plurality of successive printing stations for depositing a series of images on a substrate in a continuous in-line process;

one of said stations comprising a flexographic printing station for printing a first color image using the flexographic process; and

at least one of the other successive printing stations comprising an offset lithographic printing station for printing a second color image on the reverse side of the substrate of the first color image using the offset lithographic process in said continuous in-line process.

51. Apparatus as in claim 49 wherein said suspended material includes nonuniform-sized metal particles to form said metallic coating.

52. (Amended) Apparatus as in claim 49 further including: said flexographic printing station including a plate cylinder having a flexographic plate thereon, a blanket cylinder, and an impression cylinder;

a flexographic plate image transferred from said plate cylinder to said blanket cylinder, said image being formed of said metallic coating, said impression cylinder in ink-transfer relationship with said blanket cylinder, said blanket cylinder transferring said metallic coating to said substrate for printing said flexographic plate image on said substrate; and

an anilox roller associated with said flexographic plate for supplying said aqueous-based vehicle containing said suspended metallic material to said flexographic plate.

53. Apparatus for creating a combined lithographic/ flexographic printing process comprising:

a plurality of successive printing stations for depositing a series of images on a substrate in a continuous in-line process;

one of said stations comprising a flexographic printing station for printing a first color image using the flexographic process; and

at least one of the other successive printing stations comprising an offset lithographic printing station for printing a second color image on the reverse side of the substrate of the first color image using the offset lithographic process in said continuous in-line process.

54. Apparatus as in claim 53 further including:

said flexographic printing station including a plate cylinder, a blanket cylinder, and an impression cylinder;

a flexographic plate on said plate cylinder;

an anilox roller associated with said flexographic plate for supplying a first color to said flexographic plate to form said first color image; and

said blanket cylinder receiving said first color image from said plate cylinder and transferring said first color image to said impression cylinder for printing on said substrate.

55. (Twice Amended) Apparatus for creating a combined lithographic/ flexographic printing process comprising:

a substrate;

a plurality of successive printing stations for depositing a series of images on a substrate in a continuous in-line process;

at least one of said successive printing stations being a flexographic station and comprising:

(1) a supply of liquid coating;

(2) a plate cylinder associated with a blanket cylinder, said plate cylinder having a flexographic plate thereon;

(3) an anilox roller associated with said liquid supply coating and said plate cylinder for delivering said liquid coating to said flexographic plate to form an image for transfer to said blanket cylinder;

(4) an impression cylinder for receiving said liquid coating image transferred from said blanket cylinder and printing said image on one side of said substrate; and

at least one offset lithographic printing station for receiving said substrate and printing on top of or on the opposite side to that previously printed.

56. Apparatus as in claim 55 wherein said liquid coating image printed on said substrate is a white color ink.

57. (Twice Amended) Apparatus as in claim 56 further including an air dryer associated with each impression cylinder on said flexographic station, said air dryer having sufficient air velocity for drying said liquid coating before the substrate is transferred to the successive printing station in said continuous in-line process.

58. (Twice Amended) Apparatus for a combined lithographic/flexographic printing process comprising:

a plurality of successive printing stations for depositing a series of images on a substrate in a continuous in-line process, said printing stations including, both lithographic and at least two flexographic printing stations;

a blanket cylinder at least a first one of said flexographic printing stations;

flexographic ink-providing means for applying a flexographic ink to said blanket cylinder to form an image on one side of a substrate;

a substrate for receiving said flexographic ink image transferred from said blanket cylinder; and

at least one subsequent lithographic printing station in said in-line process for receiving said image printed substrate and printing an additional colored ink image on said substrate on top of said flexographic ink image or the opposite side to that previously printed using offset lithography.

59. Apparatus as in claim 58 further comprising:

a plate cylinder at said at least first one of said flexographic stations;

a flexographic plate on said plate cylinder for receiving and transferring said flexographic ink to said blanket cylinder; and

said flexographic ink-providing means including a flexographic ink supply and an anilox roller associated with said flexographic ink supply for transferring said flexographic ink to said flexographic plate.

60. (Twice Amended) Apparatus for a combined lithographic/flexographic printing process for printing a multicolored image comprising:

a plurality of successive printing stations for depositing ink to form a series of images on a substrate in a continuous in-line process, said printing stations including both lithographic and flexographic printing stations;

at least one of said flexographic printing stations having:

(1) a plate cylinder and a blanket cylinder, said plate cylinder including a flexographic plate having an image thereon for transferring a flexographic color ink image to said blanket cylinder;

(2) an etched anilox roller for applying a flexographic color ink to said flexographic plate on said plate cylinder;

(3) an impression cylinder in ink-transfer relationship with said blanket cylinder for transferring said flexographic color ink image from said blanket cylinder to one side of said substrate; and

at least one of said succeeding printing stations being a lithographic printing station using offset lithography for printing additional colored ink images on top of said flexographic ink image or on the opposite side to that that previously printed.

61. Apparatus as in claim 60 wherein said additional colored ink images are formed with lithographic inks.

62. Apparatus as in claim 60 wherein at least one of said colored ink images is formed with a waterless ink.

63. Apparatus as in claim 60 further including an air dryer adjacent to said impression cylinder for drying the colored flexographic ink image transferred to said substrate before said additional colored ink images are printed thereon.

64. (Amended) Apparatus as in claim 60 further including halftone printing plates for printing said additional colored ink images.

65. Apparatus as in claim 60 wherein said colored flexographic ink image and said lithographic colored ink images are printed as solid colors and/or with halftone printing plates in sequence and in registry in said successive printing stations to produce said multicolored image on said substrate.

66. (Amended) Apparatus as in claim 60 wherein at least one of the successive printing stations is a sheet-fed press.

67. Apparatus as in claim 60 wherein at least one of said flexographic printing stations prints said flexographic ink image with liquid vehicle slurry containing an encapsulated essence.

68. Apparatus as in claim 60 wherein at least one of said printing stations prints said flexographic ink image with a water-based liquid vehicle containing, suspended particles.

69. Apparatus as in claim 68 wherein said suspended particles are uniform in size.

70. Apparatus as in claim 68 wherein said suspended particles are nonuniform in size.

71. Apparatus as in claim 68 wherein said suspended particles are metallic particles.

72. (Twice Amended) A method of combining lithography and flexographic printing in a continuous in-line process comprising the steps of:

providing a plurality of successive lithographic and flexographic printing stations for depositing a series of images on a substrate;

printing a flexographic ink image as one of said series of images on one side of said substrate at least one of said flexographic stations;

transferring said printed substrate to at least one subsequent printing station in said continuous in-line process; and

printing an image on the reverse side of said substrate having said flexographic ink image, at least one of said other subsequent lithographic printing stations with an offset lithographic process in the continuous in-line process.

73. (Amended) A method as in claim 72 further comprising the step of drying said flexographic ink image on said substrate with an air dryer prior to printing colored ink images thereon.

74. (Amended) A method as in claim 73 further including the step of printing a coating on top of said colored ink images at one of said plurality of subsequent printing stations.

75. (Amended) A method as in claim 73 wherein said colored ink images are formed from waterless colored inks.

76. (Amended) A method as in claim 75 wherein said waterless colored inks are in a solvent-based liquid vehicle.

77. (Amended) A method as in claim 72 further including the steps of:
printing a slurry on one side of said substrate at any of said flexographic printing stations in said continuous in-line process;
using an encapsulated essence in said slurry; and
printing an ink on the reverse side of said substrate at a subsequent printing station in said in-line process.

78. (Twice Amended) A method as in claim 77 further including the step of printing an aqueous-based coating over said slurry.

79. A method as in claim 77 further including the step of printing an ultraviolet coating over said slurry.

80. A method of combining offset lithography and flexographic printing in a continuous in-line process comprising the steps of:

providing a substrate;

applying an ink or coating to a blanket cylinder in a pattern with a coating head at a flexographic printing station;

transferring said pattern of ink or coating from said blanket cylinder to one side of the substrate; and

printing a waterless ink pattern on the reverse side of said substrate at least one subsequent offset lithographic printing station in said continuous in-line process.

81. A method of combining lithography and flexographic printing in a continuous in-line process comprising the steps of:

printing an aqueous-based vehicle having suspended particles therein on one side of a substrate at a flexographic printing station to form an image;

transferring said image printed substrate to at least one additional printing station in said continuous in-line process; and

printing additional images on the reverse side of said printed substrate in an offset lithographic process at said at least one additional printing station in said in-line process.

82. (Three times Amended) A method of combining lithography and flexographic printing in a continuous in-line process comprising the steps of:

(1) providing a plurality of successive printing stations for depositing a series of images on a substrate in said in-line continuous process;

(2) utilizing an anilox roller to transfer a liquid ink as one of said series of images to a flexographic plate image at least one of said printing stations;

(3) printing said liquid ink from said flexographic plate image to one side of said substrate;

(4) transferring said printed substrate with said liquid ink image to a subsequent printing station in said inline printing process;

(5) repeating steps (2)-(4) at subsequent printing stations in said in-line process to achieve a desired opacity ink image on the one side of said substrate; and

(6) printing an ink pattern on the reverse side of said substrate using an offset lithographic process.

83. A method as in claim 82 further including the step of additionally printing ink images over said liquid ink image on said substrate at subsequent ones of said printing stations in said in-line process.

84. A method as in claim 83 wherein said liquid ink is an opaque white color.

85. (Twice Amended) A method of combining offset lithography and flexography using a plurality of successive printing stations in a continuous in-line process, at least one of said stations comprising a flexographic printing station for printing an image on a substrate using a flexographic process:

(1) printing an image at one or more of said printing stations on said substrate using an offset lithographic process;

(2) transferring said image printed substrate to an additional and flexographic printing station and printing at said flexographic and additional printing station a coating on all or part of said image on said substrate;

(3) transferring said substrate to one or more additional printing stations for printing the reverse side of the said substrate; and

(4) printing an image on said reverse side of said substrate at one of said one or more printing stations using an offset lithographic process in the continuous inline process.

86. (Twice Amended) Apparatus for a combined offset lithographic and flexographic printing process comprising:

(1) a substrate;

(2) a plurality of successive printing stations for depositing a series of images selected from a group consisting of lithographic and flexographic inks, coatings and slurries on one or both sides of a substrate in a continuous in-line process;

(3) at least one of said stations comprising a flexographic printing station for printing an image on said substrate using a flexographic process; and

(4) at least one of said successive printing stations being an offset lithographic printing station whereby said offset lithographic printing station is used to deposit one image of said series of images on either side of the said substrate in the continuous in-line process.

87. (Twice Amended) Apparatus for a combined offset lithographic/flexographic printing process comprising:

a plurality of successive printing stations for printing images on a substrate in a continuous in-line process, said plurality of successive printing stations including at least one offset lithographic printing station and at least one flexographic printing station for depositing lithographic inks, and one or more flexographic inks, coatings and slurries on said substrate, whereby said lithographic inks, and said one or more flexographic inks, coatings and slurries may be printed successively on one or both sides of said substrate in the continuous in-line process.

88. The apparatus of Claim 15 wherein the flexographic ink-providing means is an anilox roller mounted in an auxiliary retractable coater unit.

89. (Amended) The apparatus of Claim 15 wherein a high-velocity air dryer is associated with the impression cylinder of said at least a first one of said flexographic printing stations.

90. The apparatus of claim 89 wherein the flexographic ink-providing means is an anilox roller mounted in an auxiliary retractable unit.

91. (Three Times Amended) Method of combining offset lithographic and flexographic printing in a continuous in-line sheet-fed process, combining the steps of:

(a) providing a plurality of successive offset lithographic sheet-fed printing stations for printing images on cut paper sheets,

(b) providing one or more flexographic printing stations prior to at least one of said offset lithographic stations for printing a flexographic image on said cut paper sheets, each of said flexographic printing stations comprising,

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon,

(2) an anilox roller for applying ink to said flexographic plate on said blanket cylinder, and

(3) an impression cylinder in image-transferring relationship with said blanket cylinder for transferring said flexographic image from said flexographic plate to said cut paper sheets;

at least one of said succeeding printing stations being a lithographic printing station subsequent to said flexographic printing stations, and using offset lithography for printing additional images on top of said flexographic image on said cut paper sheets; and

(c) providing a high-velocity air dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic image printed on said cut paper sheets.

92. The method of Claim 91 wherein the printing of the flexographic image is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket.

93. (Amended) The method of Claim 91 wherein the printing of the flexographic image is accomplished by the anilox roller being mounted in a flexographic printing station.

94. (Three Times Amended) Method of combining offset lithographic and flexographic printing in a continuous in-line sheet-fed process, combining the steps of:

(a) providing a plurality of successive offset lithographic sheet-fed printing stations for printing images on one or both sides of each of a succession of cut paper sheets;

(b) providing one or more flexographic stations prior to at least one of said offset lithographic stations for printing a flexographic image on one side of each of said cut paper sheets, each flexographic printing station comprising:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon;

(2) an anilox roller for applying ink to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in image-transferring relationship with said blanket cylinder for transferring said flexographic image from said flexographic plate to said cut paper sheets;

(c) providing at least one succeeding printing station subsequent to said flexographic printing stations, and being a lithographic printing station using offset lithography for printing or more images on the reverse side of the side on which said flexographic image was printed; and

(d) providing a high velocity air dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic image printed on said cut paper sheets.

95. The method of Claim 94 wherein the printing of flexographic images is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket cylinder.

96. (Amended) The method of Claim 94 wherein the printing of flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

97. (Three Times Amended) Apparatus for a combined lithographic and flexographic printing process for printing a multicolored image on a succession of sheets comprising:

(a) a plurality of successive printing stations for printing an image on a succession of sheets in a continuous in-line process, said printing stations including both lithographic and one or more flexographic printing station;

(b) said flexographic printing stations having:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon;

(2) an anilox roller for applying ink to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in an image-transfer relationship with said blanket cylinder for transferring said flexographic color image from said flexographic plate to said succession of sheets;

at least one of said succeeding of printing stations being a lithographic printing stations subsequent to said flexographic printing stations, and using offset lithography for printing additional images on top of said flexographic image; and

(c) a high velocity air dryer associated with the impression cylinder of each flexographic printing stations for quickly drying the flexographic image printed on said succession of sheets.

98. The apparatus of Claim 97 wherein the printing of flexographic images is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket cylinder.

99. (Amended) The apparatus of Claim 97 where in the printing of flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

100. (Three Times Amended) Apparatus for a combined lithographic and flexographic printing process for printing multicolored images on a succession of sheets, comprising:

(a) a plurality of successive printing stations for printing images on one or both sides of a succession of sheets in a continuous in-line process said printing stations including both lithographic and one or more flexographic printing stations;

(b) said one or more flexographic printing stations having;

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon;

(2) an anilox roller for applying ink to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in an image-transferring relationship with said blanket cylinder for transferring said flexographic image from said flexographic plate to said succession of sheets;

(c) at least one of said succeeding printing stations being an offset lithographic printing station subsequent to said flexographic printing station, and using offset lithography for printing one or more additional images on the reverse side of the side on which said flexographic image was printed; and

(d) a high velocity air dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic image printed on said succession of sheets.

101. The apparatus of Claim 100 wherein the printing of flexographic images is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket cylinder.

102. (Amended) The apparatus of Claim 100 wherein the printing of flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

103. (Twice Amended) Method of combining offset lithographic and flexographic printing in a single pass printing process, combining the steps of:

(a) providing a plurality of successive offset lithographic printing stations for printing images on a substrate,

(b) providing one or more flexographic printing stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrate, each of said flexographic printing stations comprising:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon;

(2) an anilox roller for applying ink to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in image-transferring relationship with said blanket cylinder for transferring said flexographic images from said flexographic plate to said substrate;
and

(c) providing a dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic images printed on said substrate.

104. The method of Claim 103 wherein the printing process is continuous in-line.

105. The method of Claim 103 wherein the substrate comprises cut paper sheets.

106. The method of Claim 103 wherein the substrate comprises a continuous web.

107. The method of Claim 103 wherein the printing of the flexographic image is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket.

108. (Amended) The method of Claim 103 wherein the printing of the flexographic image is accomplished by the anilox roller being mounted in a flexographic printing station.

109. (Twice Amended) Method of combining offset lithographic and flexographic printing in a continuous in-line printing process, combining the steps of:

(a) providing a plurality of successive offset lithographic sheet-fed printing stations for printing images on a substrate;

(b) providing one or more flexographic stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrate, each flexographic printing station comprising:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon;

(2) an anilox roller for applying ink to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in image-transferring relationship with said blanket cylinder for transferring said flexographic images from said flexographic plate to said substrate;

(c) after said flexographic printing, stations, one or more succeeding offset lithographic printing stations for printing one or more images on the reverse side of the side on which said flexographic images was printed; and

(d) providing a dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic images printed on said substrate.

110. The method of Claim 108 wherein the substrate comprises cut paper sheets.

111. The method of Claim 103 wherein the substrate comprises a continuous web.

112. The method of Claim 108 wherein the printing of one or more flexographic images is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket cylinder.

113. (Amended) The method of Claim 108 wherein the printing of one or more flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

114. (Twice Amended) Apparatus for a combined offset lithographic and flexographic single pass printing process for printing one or more images on a substrate, comprising:

(a) a plurality of successive offset lithographic printing stations for printing lithographic images on a substrate;

(b) one or more flexographic printing stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrate, each of said flexographic printing stations having:

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having one or more images thereon;

(2) an anilox roller for applying ink to said flexographic plate on said blanket cylinder; and

(3) an impression cylinder in an image-transfer relationship with said blanket cylinder for transferring said one or more flexographic images from said flexographic plate to said substrate; and

(c) a dryer associated with the impression cylinder of each flexographic printing stations for quickly drying said one or more flexographic images printed on said substrate.

115. (Amended) The apparatus of Claim 114 wherein the printing process is continuous in-line.

116. (Amended) The apparatus of Claim 114 wherein the substrate comprises cut paper sheets.

117. (Amended) The apparatus of Claim 114 wherein the printing of one or more flexographic images is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket cylinder.

118. (Amended) The apparatus of Claim 112 where in the printing of flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

119. (Twice Amended) Apparatus for a combined lithographic and flexographic continuous in-line printing process for printing one or more images on substrates comprising:

(a) a plurality of successive offset lithographic printing stations for printing images on said substrates;

(b) one or more flexographic printing stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrates, each of said flexographic printing stations having;

(1) a blanket cylinder, said blanket cylinder including a flexographic plate having an image thereon;

(2) an anilox roller for applying ink to said flexographic plate on said plate cylinder;
and

(3) an impression cylinder in an image transferring relationship with said blanket cylinder for transferring said flexographic images from said flexographic plate to said substrates;

(c) at least one of said succeeding printing stations being a lithographic printing station using offset lithographic for printing, one or more additional images on the reverse side of said substrates on which said flexographic image was printed; and

(d) dryer associated with the impression cylinder of each flexographic printing station for drying the flexographic images printed on said substrates.

120. (Twice Amended) The apparatus of Claim 119 wherein the printing process is intended for a succession of cut paper sheets that are fed by a sheet feeder.

121. (Amended) The apparatus of Claim 119 wherein said substrates are a continuous web.

122. The apparatus of Claim 119 wherein the printing of one or more flexographic images is accomplished by the anilox roller being mounted in an auxiliary retractable coater unit adapted to engage said flexographic plate on said blanket cylinder.

123. (Amended) The apparatus of Claim 119 wherein the printing of one or more flexographic images is accomplished by the anilox roller being mounted in a flexographic printing station.

124. (Amended) Method of combining offset lithographic and flexographic printing in a single pass printing process combining the steps of:

(a) providing a plurality of offset lithographic printing stations for printing one or more images on a substrate;

(b) providing one or more flexographic printing stations prior to at least one of said plurality of offset lithographic printing stations for printing one or more flexographic images on said substrate; and

(c) providing a dryer associated with said one or more flexographic printing stations for drying said flexographic images printed on said substrate.

125. (Amended) Method of combining offset lithographic and flexographic printing in a continuous in-line printing process, combining the steps of:

(a) providing a plurality of offset lithographic printing stations for printing one or more images on a substrate;

(b) providing one or more flexographic printing stations prior to at least one of said plurality of offset lithographic printing stations for printing one or more flexographic images on said substrate;

(c) after said one or more flexographic printing stations, providing one or more succeeding printing offset lithographic printing stations for printing one or more images on the reverse side of the side on which said flexographic images were printed; and

(d) providing a dryer associated with said one or more flexographic printing stations for drying the flexographic images printed on said substrate.

126. The method of Claim 124 wherein the printing process is continuous in-line.

127. The method of Claim 124 or 125 wherein the substrate comprises cut paper sheets.

128. The method of Claim 124 or 125 wherein the substrate comprises a continuous web.

129. The method of Claims 124 or 125 wherein the printing, of the flexographic image is accomplished by an anilox roller being mounted in an auxiliary retractable coater unit.

130. (Amended) The method of Claim 124 or 125 wherein the printing of the flexographic image is accomplished by an anilox roller being mounted in a flexographic printing station.

131. The method of Claim 124 or 125 wherein the flexographic images are printed using a water based liquid vehicle containing suspended particles.

132. The method of Claim 131 wherein said suspended particles are uniform in size.

133. The method of Claim 131 wherein said suspended particles are nonuniform in size.

134. The method of Claim 131 wherein said suspended particles are metallic particles.

135. The method of Claim 124 or 125 wherein the flexographic images are printed using an opaque color ink.

136. The method of Claim 135 wherein the flexographic images are printed using a white color opaque ink.

137. (Amended) The method of Claim 124 or 125 wherein the flexographic images are printed with a liquid vehicle slurry containing an encapsulated essence.

138. The apparatus for a combined offset lithographic and flexographic single pass printing process for printing one or more images on a substrate, comprising:

(a) a plurality of successive offset lithographic printing stations for printing images on a substrate;

(b) one or more flexographic printing stations prior to at least one of said offset lithographic printing stations for printing one or more flexographic images on said substrate; and

(c) a dryer associated with each flexographic printing station for drying said flexographic images printed on said substrate.

139. Apparatus for a combined offset lithographic and flexographic continuous in-line printing process, comprising:

(a) a plurality of offset lithographic printing stations for printing one or more images on a substrate;

(b) one or more flexographic printing stations prior to at least one of said offset lithographic printing stations for printing, one or more flexographic images on said substrate;

(c) one or more succeeding offset lithographic printing stations after said flexographic printing stations for printing one or more images on the reverse side of the side on which said flexographic images were printed; and

(d) a dryer associated with each flexographic printing, stations for drying the flexographic images printed on said substrate.

140. The apparatus of Claim 138 wherein the printing process is continuous in-line.

141. (Amended) The apparatus of Claim 138 or 139 wherein the printing stations are for cut paper sheets.

142. (Amended) The apparatus of Claim 138 or 139 wherein the printing stations are for a continuous web.

143. The apparatus of Claims 138 or 139 wherein the printing of the flexographic image is accomplished by an anilox roller being mounted in an auxiliary retractable coater unit.

144. (Amended) The apparatus of Claim 138 or 139 wherein the printing of the flexographic image is accomplished by an anilox roller being mounted in a flexographic printing station.

145. The apparatus of Claim 138 or 139 wherein the flexographic images are printed using a water based liquid vehicle containing suspended particles.

146. The apparatus of Claim 145 wherein said suspended particles are uniform in size.

147. The apparatus of Claim 145 wherein said suspended particles are nonuniform in size.

148. The apparatus of Claim 145 wherein said suspended particles are metallic particles.

149. The apparatus of Claim 138 or 139 wherein the flexographic images are printed using an opaque color ink.

150. The apparatus of Claim 149 wherein the flexographic images are printed using a white color opaque ink.

151. (Amended) The apparatus of Claim 138 or 139 wherein the flexographic images are printed with a liquid vehicle spin containing an encapsulated essence.

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Status of Claims:

Original claims 1-41 and new claims 42-151 are pending.

Support for Claim Changes:

Support for the changes made to claims 9, 15, 52, 58, 100, 103, 109, 113, 119 can be found throughout the specification, and specifically at col. 4, ll. 45-60.

Changes to claim 21 have been made to correct informalities identified by the Examiner. Support for the claim as amended is found throughout the specification.

Changes to claims 44, 57, 60, 64, 66, 73-75, 77, 78, 82, 85-89, 93, 96, 97, 99, 102, 108, 115, 116, 117, 118, 121-125, 130, 137, 141, 142, 144, and 151 have been made to correct informalities identified by the Examiner. Support for these changes can be found throughout the specification.

Support for the changes to claims 45 and 46 can be found throughout the specification, and specifically at col. 4, ll. 23-31.

Support for the changes to claim 52 is found throughout the specification, specifically at col. 4, ll. 45-60.

Support for the changes to claim 55 can be found at col. 5, ll. 5-10.

Claim 72 has been amended to correct informalities. Support for the changes can be found throughout the specification, and specifically at col. 4, line 65-col. 5, line 4.

Claim 76 has been amended to correct informalities. Support for the changes can be found throughout the specification, and specifically at col. 1, line 56-col. 1, line 67.

Claims 91, 94, 97, 100, 103, 106, 109, 114, and 119 have been amended to correct informalities identified by the Examiner. Specifically, each of these claims has been amended to remove the text indicating that the blanket cylinder receives the images. These claims have also been amended to indicate that the anilox roller applies ink to the flexographic plate, and that the impression cylinder transfers the flexographic images from the flexographic plate to the substrates or paper sheets. In general, support for the changes to these claims can be found throughout the specification, and specifically at col. 6, line 65 thru col. 7, line 4., as well as at col. 7, line 49 thru col. 7, line 60. With respect to claims 91 and 94, support for the changes to these claims can be found throughout the specification, and specifically at col. 3, ll. 5-15.

With respect to claim 120, support for the changes to this claim can be found throughout the specification, and specifically at col. 6, ll. 52-56.

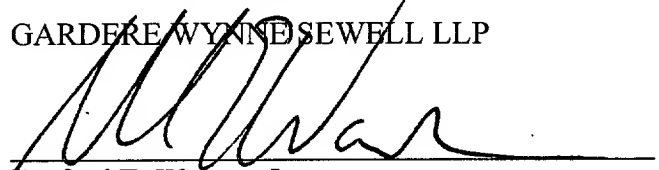
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Remarks

Applicants respectfully submit the above amendments for consideration. Applicants respectfully submit that the above amendments do not add new matter, and entry of the above amendments is respectfully requested. Applicants further submit that the above amendments are drawn to novel and non-obvious subject matter and their allowance is, therefore, respectfully requested. The Examiner is requested to contact the undersigned for any reason that would expedite the allowance and issue of the above claims.

Respectfully submitted,

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Dated: 8/28/02

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